09/672,639   00AB154

REMARKS

Claims 1-14, 22-27 and 29-35 are currently pending in the subject application and are presently under consideration. Claims 1 and 22 have been amended to be more consistent with the original form; accordingly no new matter has been introduced, no new search is required, and it is respectfully submitted that the amendments should be entered. Favorable reconsideration of the subject patent application is respectfully requested in view of the amendments and comments herein.

I.   Rejection of Claims 1-14, 22-27, 29, 30-35 Under 35 U.S.C. §112, first paragraph

Claims 1-14, 22-27, 29, and 30-35 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Claims 1 and 22 (of which claims 2-14, 23-27, 29, and 30-35 depend upon) have been amended to be more consistent with the original form. Withdrawal of this rejection is respectfully requested.

II.   Rejection of Claims 1-27, 29, and 30-35 Under 35 U.S.C. §112, second paragraph

Claims 1-27, 29, and 30-35 stand rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants' regard as the invention. Claims 1 and 22 (of which claims 2-14, 23-27, 29, and 30-35 depend upon) have been amended to be more consistent with the previously presented claims based on the specification of the subject application. Withdrawal of this rejection is respectfully requested.

III.   Rejection of Claims 1-14 Under 35 U.S.C. §103(a)

Claims 1-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tjandrasuwita, (US 6,198,469) in view of Reddy, et al., (US 6,215,459), and Hannah, (US 5,568,192). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Neither Tjandrasuwita, Reddy, et al., nor Hannah alone or in combination teach or suggest the claimed invention.

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To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) *must teach or suggest all the claim limitations. See* MPEP §706.02(j). The *teaching or suggestion to make the claimed combination* and the reasonable expectation of success *must both be found in the prior art and not based on applicant's disclosure. See In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added).

In particular, independent claim 1 recites a programmable grayscale generator that *generates grayscale data for a plurality of disparate display types and formats.* Tjandrasuwita merely teaches the generation of grayscale data in response to input color data - Tjandrasuwita does not teach or suggest generating grayscale data for *a plurality of disparate display types and formats* as in applicants' claimed invention. By invoking the flat panel interface 113, Tjandrasuwita provides grayscale data to various digital display types having the same or common refresh rate. Similarly, Reddy, *et al.* teaches a controller that provides data to two displays having the same or common refresh rate simultaneously. On the contrary, applicants' claimed invention generates grayscale data for a plurality of disparate display types (*e.g.,* LCD, CRT, TFT, flat panel, STN, ...) having a plurality of disparate display formats (*e.g.,* color, monochrome, resolution, refresh rate, *etc.*) without the rerouting of signals outside the raster engine allowing video data to be provided to a wide variety of different displays with different color capabilities and resolutions. Nowhere in Tjandrasuwita nor Reddy, *et al.* is generating data for a plurality of disparate display types and respective disparate formats taught or suggested. Furthermore, Hannah does not cure the aforementioned deficiencies of Tjandrasuwita and Reddy, *et al.* with regard to such claimed aspects.

Furthermore, independent claim 1 recites a *single output* that can provide data to both CRTs and LCDs *over a single interface.* Tjandrasuwita discloses two different physical connection points – one for CRTs and one for LCDs. LCDs are connected and receive data from a flat panel interface 113 (wherein the grayscale data is generated), while CRTs connect and receive data from a DAC (Digital-to-Analog Converter) external to both the controller and the

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flat panel interface (wherein no grayscale data is generated). (*See* col. 4, 62-67 through col. 5, lines 1-10). In particular, although a single output is transmitted to a single device in Tjandrasuwita, the signal is transmitted *via* two disparate interfaces based upon the display type. The Examiner mistakenly contends the grayscale output signal for an LCD *via* the flat panel interface 113 and the digital-to-analog converted signal for a CRT *via* the graphics controller share the same output, yet the same output cannot be over a single interface. Specifically, the Examiner states that Tjandrasuwita passes the same data to the two output data lines. (*See* pg. 8, lines 5-7 of the Final Office Action). Yet, the data targeted for an LCD is generated grayscale, while data targeted for the CRT is simply converted from digital-to-analog (*e.g.*, grayscale data is not generated).

Reddy, *et al.* discloses a single controller that can provide data to two different displays simultaneously. Thus, Reddy, *et al.* teaches one controller that controls *two distinctly connected displays* (*e.g.*, CRT and LCD) over *two distinctive interfaces* thereby allowing switching between images on one display with images on another. Hence, neither Tjandrasuwita nor Reddy, *et al.* teach providing the selected pixel data to a *single output over a single interface* for both CRTs and LCDs as claimed. In addition, Hannah does not cure the aforementioned deficiencies with regard to the claimed limitations.

Dependent claim 3 states the grayscale look up table comprises a *three dimensional matrix*. Examiner states Tjandrasuwita teaches or suggests such three dimensional matrix as claimed by the applicants' subject application. On the contrary, Tjandrasuwita discloses two tables (Table 1 and Table 2), wherein Table 1 includes FRCLEVEL data (which indicates whether 2, 3, 8, or 16 levels of gray scaling are desired) and Table 2 includes brightness-level waveform data (each waveform is indicative of the average brightness of the pixel over 16 frames). Moreover, the three dimensional matrix in the subject application includes a frame dimension, a vertical dimension, and a horizontal dimension. Nowhere in Tjandrasuwita, Reddy, *et al.*, nor Hannah is a three dimensional matrix within a grayscale look up table taught or suggested, let alone the specific dimensions recited in such dependent claim.

In view of at least the aforementioned reasons, the subject invention as recited in independent claim 1 (of which claims 2-14 respectfully depend therefrom) is not obvious over Tjandrasuwita, Reddy, *et al.* and Hannah taken individually or in combination. Accordingly, this rejection should be withdrawn.

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IV.   Rejection of Claims 22-27 and 30-35 Under 35 U.S.C. §103(a)

Claims 22-27 and 30-35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tjandrasuwita, in view of Reddy, *et al.*, and Dye, (US 4,965,559). Applicants' representative respectfully requests this rejection be withdrawn for at least the following reasons.

Neither Tjandrasuwita, Reddy, *et al.*, nor Dye alone or in combination teach or suggest the claimed invention. Specifically, claim 22 recites generating *grayscale data for a plurality of disparate display types and formats*. As stated above, neither Tjandrasuwita nor Reddy, *et al.* teach or suggest generating data for a plurality of disparate display types and respective disparate formats taught or suggested. Rather, Tjandrasuwita and Reddy, *et al.* disclose providing grayscale data to various digital display types having the same or common refresh rate and a controller that provides data to two displays having the same or common refresh rate simultaneously, respectively. Applicants' claimed invention generates grayscale data for a plurality of disparate display types (*e.g.*, LCD, CRT, TFT, flat panel, STN, ...) having a plurality of disparate display formats (*e.g.*, color, monochrome, resolution, refresh rate, *etc.*) allowing video data to be provided to a wide variety of *different displays with different color capabilities and resolutions*. Tjandrasuwita and Reddy, *et al.* do not teach or suggest such claimed aspects and Dye does not cure these aforementioned deficiencies.

Moreover, claim 22 recites *a parallel output* that provides the selected pixel data at a *single parallel output* according to the selected display mode. Nowhere in Tjandrasuwita nor Reddy, *et al.* is a single output disclosed, let alone a single parallel output. The multiplexor 208 (of which the Examiner contends is a parallel output) is a selector between two signals (one for the TFT module 206 and the other for the STN module 207) that are generated for grayscale on an LCD. The multiplexor 208 merely selects between the two signals based on the LCD type that the grayscale is to be generated, and does not generate the data in parallel. Tjandrasuwita generates grayscale for LCDs exclusively; the multiplexor 208 is within the flat panel interface 113 which is a completely disparate signal in comparison to the converted (digital-to-analog) signal transmitted to CRT's *via* the display graphics controller. Thus, it is unforeseeable how the Examiner contends the multiplexor 208 to be a *single parallel output* as depicted in the applicants' claimed invention. Tjandrasuwita does not teach or suggest *a single parallel output*

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as recited in independent claim 22. Additionally, Reddy, *et al.*, nor Dye cures the above mentioned deficiencies and withdrawal of this rejection is respectfully requested.

As stated above, neither Tjandrasuwita nor Reddy, *et al.* alone or in combination teach or suggest applicants' claimed invention as recited in independent claim 1 (of which claims 30-35 depend therefrom). Neither Tjandrasuwita nor Reddy, *et al.* teach or suggest a programmable grayscale generator that *generates grayscale data for a plurality of disparate display types and formats*. Moreover, Dye does not cure the aforementioned deficiencies of Tjandrasuwita and Reddy, *et al.*

In addition, dependent claims 33 and 34 utilize an underflow system that generates an *interrupt based on a detected or predicted underflow condition*, wherein a host processor can balance bus load and/or limit burst sizes to reduce undesirable visual effects. Dye simply discloses a multi-channel display system that manages the driving of multiple displays. The interrupt in Dye does is not based on a detected or predicted underflow condition of a raster engine but rather it is based upon VME bus status, wherein the status is determined upon various user application programs and/or the VME host. In other words, the interrupts disclosed in Dye are to determine priority of the user application programs and/or the VME host such that priority allows transmission of data to the multi-display system to drive multiple displays. (*See* Fig. 2 and col. 2, lines 4-21). Nowhere in Dye is an interrupt *generated based on a detected or predicted underflow condition*. Moreover, the aforementioned deficiencies of Dye are not cured by Tjandrasuwita and Reddy, *et al.*

In view of at least the foregoing, applicants' invention as recited in independent claim 22 (of which claims 23-27 and 29 depend upon) is not obvious over the cited art. Accordingly, withdrawal of this rejection and allowance of claims 22-27 and 29 is respectfully requested.

V.   Rejection of Claim 29 Under 35 U.S.C. §103(a)

Claim 29 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Tjandrasuwita, in view of Reddy, *et al.*, Hannah, and Dye.

Claim 29 depends from independent claim 22. As stated *supra*, Tjandrasuwita, Reddy, and Hannah do not teach or suggest applicants' invention as recited in this independent claim; and Dye does not cure the aforementioned deficiencies of these primary references. Accordingly, this rejection should be withdrawn.
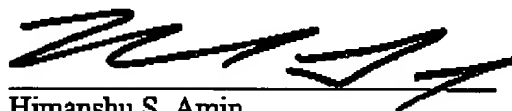
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Conclusion

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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